Dalbergia melanoxylon Guill. & Perr.

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Published in:
Seed Leaflet

Publication date:
2007

FOREST & LANDSCAPE

SEED LEAFLET

No. 135 December 2007

MILLENNIUM SEED BANK PROJECT Kew

Dalbergia melanoxylon Guill. & Perr.

Taxonomy and nomenclature

Family: Leguminoseae

Synonyms: *Amerimnon melanoxylon* (Guill. & Perr.) Kuntze, *A. stocksii* (Benth.) Kuntze, *D. stocksii* Benth.

Vernacular/common names: African blackwood, African ebony[1] and zebrawood. Its local names: abanus, mpingo (Swahili), mwengo (Meru), Kissikiinde (Mooré), opok (Luhya), mugembe (Kinyamwezi), babanous, kelto (Arabic).

Distribution and habitat

The species is widespread in tropical Africa, from Senegal and Cote d'Ivoire in the West, to Kenya and Ethiopia in the East, and extending South to South Africa. It is found in at least 26 sub-Saharan countries, and is often grown outside its native area, e.g. in India and Sri Lanka. It occurs in the Sudanian savannah on humid rocky soils near swamps or temporary rivers. It is also found in deciduous woodland, in coastal bushland and wooded grassland, where the soils are sufficiently moist. Minimum annual rainfall > 400 mm. On dry sites it grows on poorly drained soils. It grows from low altitudes of up to 1400 m. Its range of distribution has been reduced due to timber exploitation. It is listed as a threatened species in e.g. Burkina Faso. Its natural regeneration is erratic, and it is slow growing.

Uses

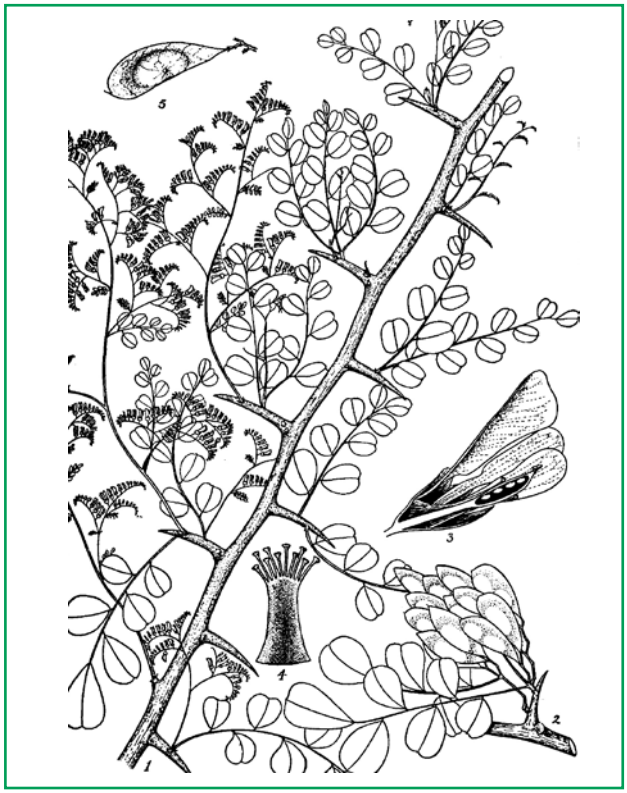
Dalbergia melanoxylon wood has characteristically thin external yellowish white sapwood and internal purple heartwood. The hard, heavy wood is fine-grained, resistant to insect attack and is one of the most valuable timbers in Africa. The timber (mpingo) is widely used in carpentry, construction, musical instruments, walking sticks, furniture, tool handles and art work. It is mainly the intensive exploitation of its wood, which makes it endangered in Kenya. The foliage is used as forage and fodder for animal and pods are eaten by livestock. The species has various local medicinal uses (bark, roots and leaves) as well as many magic-religious uses.

[1] Note: Ebony is a trade name of *Diospyros spp.* , but occasionally used for other species with dark or blackish wood.

Botanical description

Dalbergia melanoxylon is a small spiny deciduous tree or shrub. Most individuals are 5-7 meter high, multi-stemmed, branched with a low, irregularly shaped crown. Trees can occasionally grow to 20 meters. Young branchlets whitish grey with dense white lenticles; older bark pale grey, becoming fissured or flaked with age; the slash is orange-pink. The 0.5-5 cm long, straight thorns are the hardened tips of short branches. The stipules are leaf-like, about 5 mm long, and fall very early. Leaves are alternate, imparipinnate, 5-20 cm long with 4-6 pairs of alternate or subopposite leaflets, plus the terminal one. Leaflets variable in shape and size; they are mostly obovate, with a broadly cuneate to subcordate base, and a truncate or emarginated apex, 1-5 by 0.7-3 cm with a 4-7 mm long petiole.

The white, sweetly scented asymmetrical flowers are 5 mm long, with a slightly pubescent calyx, and usually 9 stamens. The 3-12 cm long, laxly branched and many flowered panicles appear with the new leaves.



Dalbergia melanoxylon, 1. flowering branchlet, 2. fruiting panicle, 3. flower, 4. staminal sheath, 5. immature fruit. From: Kenya Trees and Shrubs, Dale and Greenway 1961.

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Flowering and fruiting habit

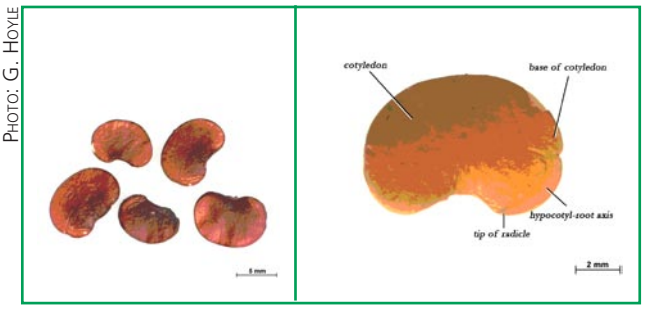
Flowering occurs in the second part of the dry season or with the first rains when the leaves open; in southern Africa, for example, this is in October to December. Flowers are hermaphroditic and pollinated by insects. Fruit development from pollination to maturity takes about 6-8 months. In southern Africa the fruits are mature between January and March, in Tanzania fruit are collected between May and June.

Fruit and seed description

Fruit: Elliptic-oblong or irregularly oblong, flattened, indehiscent pods, grey when mature, 3-7 by 0.8-1.4 cm. Each pod usually contains one seed, but can contain up to 4 seeds. More-seeded fruits are constricted between the seeds.

Seed: The seeds are reniform (kidney shaped), laterally compressed, smooth and 7.5-9.5 long, 4.8-6.3 mm wide and 0.5-0.7 mm thick. The mean fresh seed mass varies between 0.06 and 0.17 g (TSW = 60 to 170 g). The seeds are very fragile when dry and difficult to separate from the pod. Mature seeds are brown / black and can easily be selected from the immature white ones. The seeds have a thin seed coat, small hilum and very short raphe. The endosperm is non-ruminate, and the embryo is yellow.

PHOTO: G. HOYLE



D. melanoxylon seeds.

Harvest

The pods remain on the trees for some time after maturity; however, the seeds are prone to insect infestation and therefore should be harvested as soon as they are ripe. Pods are collected by shaking the branches to detach the pods.

Processing and handling

Pods should be sun dried after harvest. Cut tests or X-ray can assess the degree of insect infestation. Seed extraction is very tedious; therefore, pods are typically broken and pieces containing one to several seeds are sown. This procedure implies that empty segments of pod may be obtained. However, it is not possible to visually determine whether a pod is empty, but full seed extraction is not recommended because of the fragility of the seeds.

Storage and viability

Seed storage behaviour is »orthodox«. Viability can be maintained for several years in hermetic storage at 3°C with 9-12% moisture content. Seeds stored in a cool room at 4–5°C maintained viability of 84% germination after three years. Seeds of this species have been stored at the MSB since 1990 with recent X-ray analysis indicating about 90% viability.

Dormancy and pretreatment

Seeds exhibit no or only slight physical dormancy. Soaking seeds in water at room temperature for 24 h or removing the covering pod before sowing improves their germination.

Sowing and germination

Germination is epigeal. Under optimum conditions seeds germinate in 8-20 days. Growth is fairly slow, with the plant reaching 4 m after c. 7 years.

Selected readings

Arbonnier, M. 2004. Trees, shrubs and lianas of West African dry zones. CIRAD, Montpellier; Museum national d'histoire naturelle, Paris.

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Seed Information Database (SID). 2004. http://www.rbgkew.org.uk/data/sid (release 6.0, October 2004).

THIS NOTE WAS PREPARED IN COLLABORATION WITH CENTRE NATIONAL SEMENCES FORESTIÈRES BURKINA FASO

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